

AMENDMENTS TO THE CLAIMS

Without prejudice, please amend claims 1, 5, 12, and 13, add new claims 15-20, and cancel claim 11, so that the claims read as follows:

1. (Currently Amended) A stereolithographic method for forming a stereolithographic three-dimensional object by sequentially repeating, until a predetermined stereolithographic three-dimensional object is formed, optical building processes of exposing a surface of a photocurable resin composition layer by way of a planar plotting mask to thus form an optically-cured resin layer having a predetermined cross-sectional profile pattern; applying a photocurable resin composition layer over the optically-cured resin layer; and exposing the surface of the photocurable resin composition layer to light by way of the planar plotting mask, to thus further form an optically-cured resin layer having a predetermined cross-sectional profile pattern, the method comprising:

using a planar plotting mask, which can continuously change a mask image, as the planar plotting mask;

performing a building operation of continuously moving the planar plotting mask over plotted areas on the surface of the photocurable resin composition layer such that overlaps are formed between adjacent ones of the plotted areas during at least one of the optical building processes and of exposing the surface of the photocurable resin composition layer to light by way of the planar plotting mask while continuously changing a mask image of the planar plotting mask in accordance with a cross-sectional profile pattern of an optically-cured resin layer to be formed and in synchronism with movement of the planar plotting mask, to thus form an optically-cured resin layer having a predetermined cross-sectional profile pattern; and

performing the optical building processes such that a computer is utilized to generate mask images to attenuate a visual noticeability of the overlaps between the adjacent plotted areas in the optically-cured resin layer in a finally-obtained stereolithographic three-dimensional object by performing at least one operation selected from the group consisting of:

(i) operation for making a total intensity of light radiated onto the overlaps between the adjacent plotted areas in [[an]] the optically-cured resin layer equal or analogous to the intensity of light radiated onto areas other than the overlaps; ;

(ii) operation for making a shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer curved; and

(iii) operation for staggering positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer in vertically stacked optically-cured resin layers.

2. (Cancelled).

3. (Previously Presented) The stereolithographic method according to claim 1, wherein the planar plotting mask is a planar plotting mask in which a plurality of micro-optical shutters capable of blocking or allowing transmission of light into microdot areas are arranged in a planar manner; and

the surface of the photocurable resin composition is exposed to light while a mask image is continuously changed in accordance with a cross-sectional profile pattern to be formed by means of the plurality of micro-optical shutters during continuous movement of the planar plotting mask.

4. (Original) The stereolithographic method according to claim 3, wherein the planar plotting mask is a planar plotting mask where a liquid-crystal shutter or a digital micromirror shutter is arranged in a planar manner.

5. (Currently Amended) A stereolithographic apparatus comprising:
a photocurable resin composition supply device means for sequentially supplying a photocurable resin composition layer over a mount table or an optically-cured resin layer;
a light source;
a planar plotting mask capable of continuously changing a mask image, the stereolithographic apparatus being configured to continuously move the planar plotting mask

over plotted areas on a surface of the photocurable resin composition layer such that overlaps are formed between adjacent ones of the plotted areas; and

a computer containing information for continuously changing the mask image of the planar plotting mask in synchronism with movement of the planar plotting mask, wherein

the apparatus is configured to generate mask images with the computer to attenuate a visual noticeability of the overlaps among the adjacent plotted areas of optically-cured resin layers within a finally-obtained stereolithographic three-dimensional object by being configured to perform at least one operation selected from the group consisting of:

(i) operation for making a total intensity of light radiated onto the overlaps between the adjacent plotted areas in [[an]] the optically-cured resin layer equal or analogous to the intensity of light radiated onto areas other than the overlaps; ;

(ii) operation for making a shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer curved; and

(iii) operation for staggering positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer in vertically stacked optically-cured resin layers.

6. (Cancelled).

7. (Previously Presented) The stereolithographic apparatus according to claim 5, wherein the planar plotting mask is a planar plotting mask in which a plurality of micro-optical shutters capable of blocking or allowing transmission of light into microdot areas are arranged in a planar manner.

8. (Previously Presented) The stereolithographic apparatus according to claim 5, wherein the planar plotting mask is a planar plotting mask where a liquid-crystal shutter or a digital micromirror shutter is arranged in a planar manner.

9. (Previously Presented) The stereolithographic apparatus according to claim 5, further comprising a light-condensing lens which is interposed between the light source and the planar

plotting mask and can be continuously moved in synchronism with the planar plotting mask; and a projection lens which is interposed between the planar plotting mask and the surface of the photocurable resin composition and which can be continuously moved in synchronism with the planar plotting mask.

10. (Previously Presented) The stereolithographic method according to claim 1, wherein the attenuation of the visual noticeability of the overlaps between the adjacent plotted areas in the optically cured resin layer in a finally-obtained stereolithographic three-dimensional object results in the overlaps being unnoticeable to the human eye.

11. (Cancelled).

12. (Currently Amended) The stereolithographic method according to claim 1, further comprising making a shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer curved, wherein, in order to attenuate a visual noticeability of the overlaps between the adjacent plotted areas in the optically-cured resin layer in a finally-obtained stereolithographic three-dimensional object, the operation of making a shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer curved is performed.

13. (Currently Amended) The stereolithographic method according to claim 1, further comprising staggering positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer in vertically-stacked optically-cured resin layers, wherein, in order to attenuate a visual noticeability of the overlaps between the adjacent plotted areas in the optically-cured resin layer in a finally-obtained stereolithographic three-dimensional object, the operation of staggering positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer in vertically-stacked optically-cured resin layers is performed.

14. (Previously Presented) The stereolithographic apparatus according to claim 5, wherein the apparatus is configured for the attenuation of the visual noticeability of the overlaps

between the adjacent plotted areas in the optically cured resin layer in a finally-obtained stereolithographic three-dimensional object such that the overlaps are unnoticeable to the human eye.

15. (New) A stereolithographic method for forming a stereolithographic three-dimensional object by sequentially repeating, until a predetermined stereolithographic three-dimensional object is formed, optical building processes of exposing a surface of a photocurable resin composition layer by way of a planar plotting mask to thus form an optically-cured resin layer having a predetermined cross-sectional profile pattern; applying a photocurable resin composition layer over the optically-cured resin layer; and exposing the surface of the photocurable resin composition layer to light by way of the planar plotting mask, to thus further form an optically-cured resin layer having a predetermined cross-sectional profile pattern, the method comprising:

using a planar plotting mask, which can continuously change a mask image, as the planar plotting mask;

performing a building operation of continuously moving the planar plotting mask over plotted areas on the surface of the photocurable resin composition layer such that overlaps are formed between adjacent ones of the plotted areas during at least one of the optical building processes and of exposing the surface of the photocurable resin composition layer to light by way of the planar plotting mask while continuously changing a mask image of the planar plotting mask in accordance with a cross-sectional profile pattern of an optically-cured resin layer to be formed and in synchronism with movement of the planar plotting mask, to thus form an optically-cured resin layer having a predetermined cross-sectional profile pattern; and

performing the optical building processes such that a computer is utilized to generate mask images to attenuate a visual noticeability of the overlaps between the adjacent plotted areas in the optically-cured resin layer in a finally-obtained stereolithographic three-dimensional object by making a shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer curved, or by staggering positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer in vertically-stacked optically-cured resin layers.

16. (New) A stereolithographic apparatus comprising:
 - a photocurable resin composition supply device for sequentially supplying a photocurable resin composition layer over a mount table or an optically-cured resin layer;
 - a light source;
 - a planar plotting mask capable of continuously changing a mask image, the stereolithographic apparatus being configured to continuously move the planar plotting mask over plotted areas on a surface of the photocurable resin composition layer such that overlaps are formed between adjacent ones of the plotted areas; and
 - a computer containing information for continuously changing the mask image of the planar plotting mask in synchronism with movement of the planar plotting mask, wherein the apparatus is configured to generate mask images with the computer to attenuate a visual noticeability of the overlaps among the adjacent plotted areas of optically-cured resin layers within a finally-obtained stereolithographic three-dimensional object by making a shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer curved, or by staggering positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer in vertically-stacked optically-cured resin layers.
17. (New) The stereolithographic method according to claim 15, wherein the shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer is made curved.
18. (New) The stereolithographic apparatus according to claim 16, wherein the apparatus is configured to make the shape of the overlaps between the adjacent plotted areas in the optically-cured resin layer curved.
19. (New) The stereolithographic method according to claim 15, wherein the positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer are staggered in vertically-stacked optically-cured resin layers.
20. (New) The stereolithographic apparatus according to claim 16, wherein the apparatus is configured to stagger the positions of the overlaps between the adjacent plotted areas in the optically-cured resin layer in vertically-stacked optically-cured resin layers.